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ABSTRACT

A study compared the academic achievement and job market success of academically and/or economically disadvantaged and nondisadvantaged vocational education students. Data from student records and transcripts and employer follow-ups were collected on 2,191 students enrolled in vocational majors in Albuquerque, New Mexico. Students were classified into four categories (economically disadvantaged, academically disadvantaged, economically and academically disadvantaged, and nondisadvantaged). They were compared with respect to twenty-three variables. (One measured success in a vocational major: fourteen measured initial job market success: and eight measured long-term employment success.) No significant differences were found between academically disadvantaged and nondisadvantaged students. Differences between economically disadvantaged and nondisadvantaged students were found for seven variables: economically disadvantaged students had higher drop-out rates and were rated less highly both soon after and a year or more after employment. Their initial salaries were higher, but this difference was no longer evident after a year. Participation in a preparatory program obliterated most significant differences between those classified as economically and academically disadvantaged and those classified only as economically disadvantaged. Further research on the causes of these differences and on possible changes in student testing and placement is recommended. (A list of variables and employer follow-up responses are appended.) (MN)

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RESEARCH ON DISADVANTAGED STUDENTS AND GRADUATES

Albuquerque Technical-Vocational Institute
Albuquerque, New Mexico

George Harrison
June, 1980

CE 027 256

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FOREWORD

This document is the report of a study carried out during the period from February 25 through June 30, 1980. The study was carried out by George F. Harrison, through a personal services contract with the Albuquerque Technical-Vocational Institute (T-VI). Principal Investigator for the study was Richard S. Rounds, Day Division Director for T-VI. As stated in the contract, the purpose of the study was to conduct research, "which compares students in and completers of Institute programs who are categorized as disadvantaged with students and completers not so categorized in terms of attrition, placement, salaries, employment retention, and other related topics".

This document details that research.

ACKNOWLEDGEMENTS

This study was accomplished through the cooperation and contributions of numerous persons:

Richard S. Rounds, T-VI Day Division Director, acted as principal investigator. He and his Administrative Assistant, Doug Swift, gave considerable guidance and direction to the study. Their continued accessibility and efforts were most instrumental in the success of the project.

Other T-VI staff members contributed to the completion of the study. Isabel Gelsinger and her Records Department staff were helpful in the completion and verification of data. Marvin Burianek and Loretta Roe provided space and office support. Pearlene Dawson assisted in the design and collection of follow-up data.

A special thanks goes to Randall Whelan, VTIS computer programmer and analyst for the State Department of Education, for providing the initial data and for updating and creating new data bases used in the study. The project could not have been completed without Randy's commitment. Virginia Pena and Rosella Cruz are thanked for their secretarial assistance.

George F. Harrison
Project Consultant

ABSTRACT

The Preparatory Program at the Albuquerque Technical-Vocational Institute prepares academically disadvantaged students for entry into vocational major programs. Students whose scores on advisement tests are below levels considered necessary for reasonable assurance of success in vocational majors are advised to enroll in the 15-week Preparatory Program. Approximately 28% of the full-time students entering the Institute enroll in the Preparatory Program.

The program is designed to be an equalizer: academically disadvantaged students who complete the program should be no different from those who enter directly into vocational majors. Research was conducted to determine if differences exist in terms of completion of Institute training programs, initial employment, and employment a year or more following graduation. The research also compared economically disadvantaged students with their nondisadvantaged counterparts.

The data base consisted of 2,191 students who were enrolled in vocational majors with anticipated graduation dates of December 1978 and April 1979. A graduation date of August 1978 was used for students in two programs which

graduate only one class each year. These graduation dates permitted tracking students through their program of studies and a year or more following graduation.

Students in the data base were placed in one of the following categories:

1. Economically disadvantaged (an approximation to the Department of Labor guidelines as available data permitted);

2. Academically disadvantaged (completed Preparatory Program prior to entering a vocational major);

3. Academically and economically disadvantaged; or

4. Nondisadvantaged.

Twenty-three variables were selected. One measured success in a vocational major (graduated, shortened completion, withdrew); 14 measured initial success in the job market as obtained from the 90- to 120-day employer follow-up surveys; and 8 measured long-term employment success obtained from an additional follow-up survey. A statistically significant ($p<.05$) difference between academically disadvantaged and nondisadvantaged students was found on none of the 23 variables.

Significant ($p<.05$) differences between economically disadvantaged and nondisadvantaged students were found on seven variables: economically disadvantaged students have

higher drop-out rates from vocational major programs, are rated less highly soon after employment, and are rated less highly a year or more after initial employment. The initial salary is significantly higher for economically disadvantaged students, but this benefit was not apparent on the one-year-or-more follow-up.

For those students who were both economically and academically disadvantaged, the Preparatory Program obliterated most of the significant differences experienced by those categorized only as economically disadvantaged. Some elements of the Preparatory Program may be of benefit to the economically disadvantaged as well as to the academically disadvantaged.

The research was supported by a federal vocational education funding grant provided by the New Mexico State Department of Education.

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BACKGROUND INFORMATION

The Albuquerque Technical-Vocational Institute, New Mexico's first post-secondary area vocational school, came officially into existence on July 1, 1965. It had, however, been in operation since early 1965, operating under the auspices of the Albuquerque Public Schools. As a result of the Vocational Education Act of 1963 passed by the U. S. Congress, the New Mexico Legislature passed legislation enabling the creation of such area vocational schools to provide vocational and technical education for New Mexico citizens.

The Institute began its operation in a two-story former elementary school, and a number of cottages that were surplus military structures. These facilities provided 28,617 square feet of total space.

Four major programs emerged during T-VI's first year. Classes began in April under the Manpower Development Training Act. These classes were conducted in sales, clerical, groundskeeping, health, automotive repair and machine trades. Five trade extension classes were conducted for carpentry journeyman beginning in July.

The Institutes fall classes for this first year began under the Economic Opportunity Act. These offerings included nursing assistant, office education, basic and remedial education, custodian training, group counseling, household specialist, sales occupations and multi-occupations.

Finally, regular T-VI day classes were begun in the fall in the areas of office education, electronics, drafting, math, technical report writing, business arithmetic and communication skills.

In addition to regular day classes, evening division classes were held in skill improvement and adult basic education. During 1965, T-VI provided educational services to about 850 day students and 1,250 evening students.

T-VI TODAY

The T-VI of today is a vastly different Institute than it was in 1965. Although its mission has remained implicitly intact since its beginning, T-VI now accomplishes this mission on a much larger and broader scale.

Instructional Programs and Enrollment

Day Division. T-VI offers a number of programs in four primary occupational areas: business occupations, health occupations. trades and technologies. The

Institute's catalog for the current (1979 - 80) school year lists the following programs.

1) Business Occupations - Accounting, Distributive Education, Fashion Merchandising, Office Occupations, Real Estate, Refresher Course for Office Workers, Sales Management and Small Business Operation.

2) Health Occupations - Nursing Assistant, Patient Service Clerk, Practical Nursing, Practical Nursing Refresher and Respiratory Therapy Technician.

3) Technologies - Civil and Map Drafting, Construction Drafting, Data Processing, Electromechanical Drafting, Electromechanical Technology, Electronics and Laser Electric-Optic Technology.

4) Trades - Air Conditioning, Heating and Refrigeration; Automotive Collision Repair; Automotive Mechanics; Baking; Carpentry; Diesel Mechanics; Electrical Trades; Graphic Arts, Industrial Electrician; Machine Trades; Masonry; Quantity Food Preparation; Parts Specialist; Plumbing; Sheet Metal; Small Engine Mechanics; and Welding.

In addition to the instructional programs offered in the four occupational departments, T-VI's Day Division offers instruction through its Department of Developmental Studies. This Department offers two major programs: The Displaced Homemakers Program and the Preparatory Program. The Preparatory Program is offered to students who need and want to improve mathematics and communication skills before entering a vocational program. The Department also helps prepare adults for the General Education Development (GED) examination.

Evening Division. T-VI's Evening Division offers classes in four areas: skill improvement, adult basic education, apprenticeship and vocational enrichment. Skill Improvement classes are offered in business, health, trades and technologies, and provide instruction for the upgrading of skills in many areas. The Adult Basic Education program offers classes for adults for improvement of basic skills, and includes preparation for the GED and citizenship preparation for aliens. The Apprentice program offers classes for the construction trades. The Vocational Enrichment programs provide vocational education classes after regular school hours for high school students.

Enrollments. The growth in enrollment at the

Institute has paralleled its growth in programs. Enrollments for all three trimesters of T-VI's first full academic year, 1965 - 66, showed 2,221 in Day Division, 3,081 in Evening Division and 116 in Adult Basic Education for an academic year total enrollment of 5,418. The 1978 - 79 school year saw enrollments of 8,832, 11,292 and 2,303, respectively, for a total three trimester enrollment of 22,427.

Facilities

Since its simple beginning in 1965 with 28,617 square feet of renovated and remodeled facilities, T-VI has grown today to encompass owned facilities totaling about 360,000 square feet.

The Institute developed a master plan several years ago that defined a phased facilities development program. The last facility to be constructed under this plan was T-VI's Joseph M. Montoya campus in Albuquerque's northeast section of town, encompassing over 55,000 square feet of space. An additional 49,000 square feet facility is currently under construction at this same northeast location, with occupancy to take place in January, 1981.

In addition to its owned facilities, Albuquerque Technical-Vocational Institute leases instructional space. The Health Occupations Program is housed in

11,500 square feet of space leased from Presbyterian Hospital, and the Institutes' Skill Center is in 20,000 square feet of space leased from the City of Albuquerque.

Financial Resources

The Institute's total estimated revenues for 1979 - 80, including building funds and special projects, is $16,258,765. Of this, $12,901,836, or approximately seventy-nine percent, are operational funds. About forty-two percent of operational revenues are from local sources, while eight percent are from federal sources and fifty percent are from State sources.

Governance

The Albuquerque Technical-Vocational Institute has political boundaries that are equal to those of the Albuquerque Public Schools (APS). For years, the Institute has had very close ties to APS, even to the point that members of the APS Board of Education were also members of the Institute's governing body, and the APS Superintendent also served as President of the Institute. However, on September 11 of 1979, residents of the T-VI district elected seven new independent board members, and the Institute and APS no longer share either governing bodies or chief administrators.

FOLLOW-UP

Since it began operations in 1965, the Institute has been carrying out a program of follow-up on its students. For its first eleven years, follow-up studies were conducted by a staff member of T-VI in addition to his/her other duties. In 1976, a secretary was given the full-time responsibility of conducting the Institute's follow-up studies. This position has been filled admirably by Pearlene Dawson since its inception.

Follow-up studies are administered by T-VI for two primary reasons. First, specific follow-up information is required by the Vocational Education Division of the New Mexico State Department of Education (SDE), and by the Veterans Administration (VA). The information is supplied to SDE to meet funding and program approval requirements. The VA uses student placement rates and other information to approve the Institute's programs for student eligibility for GI benefits. In both instances, follow-up data are used to demonstrate the credibility of the Institute's vocational and technical programs.

Second, the follow-up information is used by the Institute itself. Follow-up data serve as the basis for decision making by T-VI's administration and board

on matters of budgeting and facilities. Also, follow-up data frequently are used as the basis for making program changes and to add or delete specific programs.

Follow-up data are collected both from graduates of T-VI and from employers of the Institute's graduates. Information is collected from graduates during the period of time up to sixty days following graduation. Employers of graduates respond to follow-up questionnaires administered 90 - 120 days after students' graduation. The Institute has had excellent success in getting follow-up information from employers, with an average response rate of eighty-eight percent.

T-VI'S TESTING AND PREPARATORY PROGRAMS

As part of the enrollment process, every student applying for admission to the Institute is given a program advisement test. The purpose of the test battery is to determine each student's level of achievement, primarily in mathematics. The results serve as a major tool for the placement of students into programs.

Each program has established cut-off scores for the four parts of the advisement test. Each program's cut-off scores have been determined through rigorous study, and are felt to reflect the minimum levels of mathematics skills that are necessary for a student to succeed in

that program. A student scoring at or above these cut-off scores for the program for which he is applying qualifies for acceptance into that program. A student scoring below the cut-off levels is generally not qualified for acceptance into a specific program, although other factors can mediate the acceptance of some students who score close to the cut-off levels. Students who do not meet the qualifying test scores are normally advised to seek instruction to bring their mathematics skills up to the necessary levels to succeed in their chosen programs. The most often suggested method for remediation is the Institute's Preparatory Program.

The Prep Program is designed especially for those students who have inadequate skills in math (and to a lesser extent, communications). It is a program whose purpose is to help students improve in mathematics and communications so that they can meet the level of skills required for entry into a vocational or technical program, and can therefore expect to succeed in that program. Prep is a one-trimester full-time program, but is occasionally taken for two trimesters when needed.

STUDY METHODOLOGY

OBJECTIVES OF THE STUDY AND DEFINITIONS

This study was undertaken to determine if students who are classified as disadvantaged are as successful as non-disadvantaged students in completing programs at the Institute and in competing in the job market after graduation. Three categories of disadvantaged students were identified and studied:

1) Economically disadvantaged
2) Academically disadvantaged
3) Economically and academically disadvantaged

A student who is economically disadvantaged is one whose yearly family income is less than $6,000 and has two or fewer dependents, or whose yearly income is less than $9,000 with three or more dependents. Academically disadvantaged students are those who have successfully completed the Institute's Preparatory Program to improve their mathematics and communications skills before entering a technical or vocational program. Students in the third category, economically and academically disadvantaged, are those who fit the definitions of both

academic and economic disadvantage. Students who are non-disadvantaged are those who fit none of the above definitions.

DATA IDENTIFICATION, COLLECTION AND VERIFICATION

Data for the study were collected from three sources. The first source was computer data on file at the Institute in the Vocational Technical Information System (VTIS). VTIS is a computerized information system designed to meet federal and state post-secondary vocational education reporting requirements. It also provides management information for local and state decision making. Although the system serves all New Mexico area vocational schools, the system is housed at the Albuquerque Technical-Vocational Institute, providing T-VI direct access to the system.

Information is stored in VTIS on every student who is or has been enrolled in any course or program at the Institute. Although it includes a great deal of information on students, the variables used in this study from the VTIS included:

1) Program of enrollment
2) Student status at T-VI
3) Annual family income
4) Number of dependents

5) Preparatory Program participation

6) Original employer follow-up data (14 variables)

Students chosen to be used in the study were selected in the following manner. It was determined that the targeted students would be those with potential graduation dates of December, 1978 and April, 1979 for most programs, and August, 1978 for students in the Practical Nursing and Respiratory Therapy programs. Since the Institute has programs that range in length from one to five trimesters, the entry dates for the potential graduation dates listed above were determined by tracing back the appropriate number of trimesters. For example, the Institute's Electronics program is four trimesters in length. The entry date for students with a potential graduation date of April, 1979 was determined by backtracking from April of 1979 four trimesters to the beginning of the first trimester (January) of 1978. Therefore, all students who initially entered the Electronics program in January, 1978 had potential graduation dates of April, 1979. This process was carried out for all programs and for all three targeted graduation dates, and those students who were identified using this procedure were included in the initial data base.

The second source of data for the study was T-VI's

past laboratory listings. In the first trimester of every program, regardless of its length, each student enrolls in a laboratory class. Students who were on the laboratory listings, for the appropriate program and entry dates, but were not on the initial data listings from VTIS, were added as potential graduates.

These two data sources, VTIS and the laboratory listings, produced a total pool of some 2,800 students who were potential graduates of the Institute for the target graduation dates. After this initial data base was compiled, it was verified for completeness and accuracy. This was accomplished by comparing the data on each student with information contained in each student's transcript file that is maintained in the Records Department at T-VI. Students whose transcripts files were not accessible or could not be readily located were eliminated from the study. The data collection and verification process resulted in finalized data being available on 2,191 students.

The third and final source of data used in the study was some employer follow-up data collected especially for the study. This follow-up data was collected and used in addition to the employer follow-up survey collected 90-120 days after graduation as a part of the Institute's regular follow-up program (see the section of this report

titled FOLLOW-UP).

In summary, the three sources of data for the study were:

1) VTIS computer files
2) T-VI laboratory listings
3) Special employer follow-up survey

In addition, individual student transcripts files were used to verify data for accuracy and completeness. A listing describing all of the variables used in the study is shown in Appendix A of this report.

DATA ANALYSIS

As stated earlier in this report, the major objective of the study was to determine if there was a difference in the successes, both getting through T-VI and in the job market, between students defined as disadvantaged and non-disadvantaged students. Non-disadvantaged students were compared to three categories of disadvantaged students: economically disadvantaged, academically disadvantaged, and both economically and academically disadvantaged. Therefore, each student used in the study belonged to one, and only one, of the following categories:

1) Economically disadvantaged
2) Academically disadvantaged
3) Economically and academically disadvantaged

4) Non-disadvantaged

As a measure of success at T-VI, only one variable was used in comparing these student groups. That variable was student status at the Institute, i.e., has the student graduated, dropped, or taken shortened completion. In measuring success in the job market, a total of twenty-two individual variables were used. Fourteen of these variables were the result of the Institute's original 90-120 day employer follow-up, and the other eight came from an employer follow-up survey conducted especially for this study. Appendixes B and C show these survey instruments and summarize the employers' responses to them.

Rigorous statistical procedures were used to compare the four categories of students along the twenty-three variables. The application of these statistical procedures is important for two reasons. First, statistics indicated if there was a difference among any or all of the four categories of students along the twenty-three variables. Second, the use of levels of significance indicate how much confidence can be placed in any differences that were found between the four student categories.

The statistical procedure chosen to be used in the study was an analysis of variance (ANOVA). ANOVA is a

commonly used statistical tool in educational research, and was chosen to be used here because of its appropriateness for the kind of data being analyzed and the results that were desired. ANOVA uses complex, but highly developed and tested, mathematical formulas to measure the differences between identified groups. In this study, those identified groups were the four categories of students.

While ANOVA measured differences, or the absence of differences, among the four categories of students along each of the twenty-three variables, the level of significance gives meaning to these measurements. The significance level used for the research being reported on here was five percent (.05). This means that if the application of ANOVA along one of the variables indicated that there was a difference among categories of students, and that this measured difference is significant at the .05 level of significance, there is a ninety-five percent (95%) certainty that the difference actually exists. It also means that there is a five percent chance, or one out of twenty, that the measured difference is due to only random chance and that no difference actually exists.

Quite obviously, the more stringent the level of significance, the more confidence can be placed in the statistic. A level of significance of one percent (.01)

instills more confidence than one of five percent (.05). A level of significance of five percent is generally considered the lowest acceptable standard in educational research.

The statistical analyses and application of the significance level were carried out using a University of New Mexico (UNM) computer and a system of integrated computer programs called Statistical Analysis System (SAS). SAS is a sophisticated set of statistical analysis procedures to be used in analyzing social science data, and has broad applicability to educational research.

Although the use of SAS in analyzing data eliminates the need for extensive computer programming, it does require the use of format statements to access the package, to enter the data and to conduct and print out the analyses. To carry out these functions, the Institute contracted for the services of the UNM College of Education Educational Research and Evaluation Center (EREC). EREC completed this task under the direction of the project consultant.

FINDINGS

INTRODUCTION

The findings of the study are reported in two sections. First, analyses of the entire 2,191 student data base, without regard to department or program, were made. Second, for those variables where significant differences were found among student categories, further analyses were made on individual departments, i.e., trades, technologies, health occupations and office occupations, to determine if there are differences among students from department to department. In other words, on variables where one or more groups of students differed, these further analyses determined if the differences were spread throughout the Institute, or if the differences were more evident in some departments.

ANALYSIS OF ENTIRE STUDENT DATA BASE

Success at T-VI

As a measure of success at T-VI, the four categories of students were compared as to their current status at the Institute. Current status could be graduated, dropped,

or took a shortened completion. A student who graduated is one who completed a program and received a diploma. A student who dropped is one who registered for a program but did not complete that program. A student who took a shortened completion is one who registered for a program, but instead of finishing the program and graduating, completed only a defined portion of the program and received a certificate. (For example, Accounting is a four trimester program, and terminates with the awarding of an Accounting Diploma. However, a student may elect to end his studies after two trimesters and can be awarded a Bookkeeping Certificate. Not all programs offer this option.)

ANOVA revealed that economically disadvantaged students had slightly lower completion rates and slightly higher drop-out rates, and that these differences were statistically significant. None of the other categories yielded statistically significant differences.

Success In The Job Market

On measures of success in the job market, twenty-two variables were utilized. Fourteen of these were from the Institute's original 90-120 day employer follow-up (see Appendix B). The remaining eight were from an employer follow-up survey conducted especially for this

study (see Appendix C).

Original Follow-Up. The fourteen variables from the original 90-120 day employer follow-up can be roughly divided into three groups. The first group is made up of the first five questions on the questionnaire (II.1 to II.5). These five questions ask the employer to rate the T-VI graduate on characteristics associated with job-related skills and knowledge. For questions II.1 (work quality), II.4 (operation of equipment and apparatus) and II.5 (reading, verbal and communication skills), ANOVA found no significant differences among the four categories of students. For the remaining two questions, II.2 (work quantity) and II.3 (specific job-related knowledge), statistically significant differences, at the .05 probability level, were found between economically disadvantaged students and the other three groups of students, with the economically disadvantaged students being rated lower by employers than the other groups.

The second group of questions (III.1 to III.8) are also measures of success, but are associated more with the employees' personal characteristics than job-related skills. For questions III.1 (willingness to accept responsibility), III.4 (willingness to learn and improve), III.5 (cooperation with co-workers), III.7 (compliance with company policies, rules and practices) and III.8

(work attendance), ANOVA revealed no differences for the student groups. For questions III.2 (punctuality) and III.3 (ability to work without supervision), economically disadvantaged students again were rated lower at a significant level. For question III.6 (cooperation with management), students who were defined as both economically and academically disadvantaged were rated lower by their employers at a statistically significant level.

The third group of questions from the original 90-120 day employer follow-up consists of a single question. This question (IV.) asks employers to rate the employees' over-all competency , effectiveness, proficiency, general work attitudes and other elements of successful job performance in a single rating. For question IV, no differences were found among the four groups of students.

Special Follow-Up. The eight variables derived from the employer follow-up survey conducted especially for this study can also be divided into three groups. The first of these groups is a single question related to retention on the job, and asks if the T-VI graduate is still employed by the firm. No differences were found among the four student groups on this question.

The second group, containing five questions, was answered by employers who had T-VI graduates still employed by their firms. Three of these questions

(length of employment, in same job, current salary) indicated no differences between disadvantaged and non-disadvantaged students. The question related to the graduate's starting salary showed a significantly higher salary for economically disadvantaged students.

The final question of this group was the employers' overall performance rating of the T-VI graduate. Responses to this question showed that economically disadvantaged students and students who were both economically and academically disadvantaged were rated lower than non-disadvantaged students.

The third and final group of questions were answered by former employers of T-VI graduates. Only two questions were in this group, one asking the length of employment and one concerning the reason for the T-VI graduate leaving the firm. Both questions failed to show any significant differences among the student groups.

Summary-Analysis of Entire Student Data Base

The ANOVA revealed that disadvantaged students were just as successful as non-disadvantaged students on fifteen of the twenty-three variables measured; that is, any measured differences were determined to be not statistically significant. On the other eight variables, disadvantaged students and non-disadvantaged students differed in their rates of success.

Of the eight variables where differences were found, six indicated differences for the group of econonically disadvantaged students; one showed differences for the group of students who were categorized as both economically and academically disadvantaged; and one variable indicated that two groups, economically disadvantaged and both economically and academically disadvantaged students, were rated significantly different from the other groups. Of these eight variables where differences were found, seven saw the disadvantaged groups being rated lower, and one (starting salary) showed economically disadvantaged students rated higher.

Table 1 summarizes the ANOVA conducted on all twenty-three variables and indicates levels of significance.

FURTHER ANALYSIS OF SELECTED VARIABLES

For those eight variables where significant differences were found among student groups, further analyses were made on individual departments, i.e., trades, technologies, health occupations and office occupations. These further departmental analyses indicated whether differences were spread throughout the Institute, or if the differences were more evident in one or more department.

TABLE 1

SUMMARY OF FINDINGS
ANALYSIS OF ENTIRE STUDENT DATA BASE

Variable		Level of Significance: Disadvantaged Student Groups Compared to Non-Disadvantaged Students (NS=NOT SIGNIFICANT)		
Number	Name	Economically Disadvantaged	Academically Disadvantaged	Economically and Academically Disadvantaged
V-1	Student Status at T-VI	.007	NS	NS
	FROM ORIGINAL 90-120 DAY EMPLOYER FOLLOW-UP SURVEY			
V-2	Quality of work	NS	NS	NS
V-3	Quantity of work	.043	NS	NS
V-4	Possesses specific job related knowledge	.011	NS	NS
V-5	Operation of equipment and apparatus	NS	NS	NS
V-6	Possesses basic reading, verbal and communications skills	NS	NS	NS
V-7	Willingness to accept responsibility	NS	NS	NS
V-8	Punctuality	.044	NS	NS
V-9	Ability to work without supervision	.033	NS	NS
V-10	Willingness to learn and improve	NS	NS	NS
V-11	Cooperation with co-workers	NS	NS	NS
V-12	Cooperation with management	NS	NS	.034
V-13	Compliance with company policies, rules and regulations	NS	NS	NS
V-14	Work attendance	NS	NS	NS
V-15	Overall competency, effectiveness, proficiency, attitudes, etc.	NS	NS	NS
	FROM EMPLOYER SURVEY CONDUCTED FOR THIS STUDY			
V-16	Is T-VI graduate still employed?	NS	NS	NS
V-17	How long has graduate been employed?	NS	NS	NS
V-18	Is graduate in same job?	NS	NS	NS
V-19	Graduate's starting salary	.04	NS	NS
V-20	Graduate's current salary	NS	NS	NS
V-21	Graduate's overall performance	.01	NS	.004
V-22	How long was graduate employed?	NS	NS	NS
V-23	Graduate's reason for leaving	NS	NS	NS

Five of the eight variables where significant differences were found showed no differences on a departmental basis, indicating that the differences were spread throughout the Institute, and could not be attributed to any department. The five variables in which this was the case were those from the original 90-120 employer follow-up and were questions II.2 (quantity of work), II.3 (specific job-related knowledge), III.2 (punctuality), III.3 (ability to work without supervision) and III.6 (cooperation with management).

For the other three variables, the differences were not spread throughout the Institute, but were attributable to individual departments. In the case of student status, where the economically disadvantaged were rated lower as a group than other groups, the differences were attributable to the Technologies Department (.0001), and to a lesser extent the Business Occupations Department (.009).

Two questions from the employer follow-up survey conducted especially for this study showed significant differences. The question related to graduates' starting salaries (with economically disadvantaged students being rated significantly higher) can be attributed to the Technologies Department (.03), as can the employers' overall performance ratings of the graduates (.006).

The department-by-department analyses are summarized in Table 2.

TABLE 2

DEPARTMENTAL ANALYSES
OF SIGNIFICANT FINDINGS

Variable		Level of Significance			
Number	Name	Technologies	Trades	Health	Business
V-1	Student status at T-VI (Econ)	.0001	NS	NS	.009
V-3	Quantity of work (Econ)	NS	NS	NS	NS
V-4	Possesses specific job-related knowledge (Econ)	NS	NS	NS	NS
V-8	Punctuality (Econ)	NS	NS	NS	NS
V-9	Ability to work without supervision (Econ)	NS	NS	NS	NS
V-12	Cooperation with management (E & A)	NS	NS	NS	NS
V-19	Graduate's starting salary (Econ)	.03	NS	NS	NS
V-21	Graduate's overall performance (Econ, E & A)	.006	NS	NS	NS

Note: Econ = Economically Disadvantaged
Acad = Academically Disadvantaged
E & A = Economically & Academically Disadvantaged

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Tne analysis of variance procedures revealed that, on seven of the twenty-three variables tested, economically disadvantaged students differed significantly from their non-disadvantaged counterparts. For six of these seven variables, economically disadvantaged students were rated lower. These findings would tend to support a hypothesis that economically disadvantaged students are less successful, both in completing programs at the Institute and in the job market, than are non-disadvantaged students.

On a single variable (starting salary), economically disadvantaged students were rated significantly higher than the other three categories. It would appear that this could be due to affirmative action programs. Supportive of this is the fact that, when analyses were conducted on a departmental basis, the Technologies Department was the major contributor to the differences that were found, and employers of graduates in technologies are more likely to be active in affirmative action programs. If this is indeed the case, the effects of

these programs disappear over time, since no differences were found among student groups for current salary.

In two instances, the group of students who were defined as both economically and educationally disadvantaged were rated lower than non-disadvantaged students. However, of greater importance is the fact that in not a single instance were academically disadvantaged students rated lower on a variable than non-disadvantaged. It can only be concluded from this that academically disadvantaged students are just as successful as non-disadvantaged students in graduating from T-VI and in the job market, a good indication of the success of the Institute's Preparatory Program.

When analyses were conducted on a departmental basis, findings of statistical significance appeared to be spread throughout the Institute. However, for three variables, differences were much more evident in the Technologies Department.

Summary of Conclusions

In summary, the most important findings of this study are:

1) Economically disadvantaged students are less successful, both completing T-VI programs and on the job, than are non-disadvantaged students.

2) Academically disadvantaged students are just as successful, both completing T-VI programs and on

the job, as are non-disadvantaged students.

3) Students who are both economically and academically disadvantaged generally are just as successful, both completing T-VI programs and on the job, as are non-disadvantaged students. This indicates that the Preparatory Program not only brings students lacking mathematics and communications skills up to a level for success at T-VI, but actually mediates the negative effects of being economically disadvantaged.

4) In five instances where differences were found between disadvantaged and non-disadvantaged students, the differences were spread throughout the Institute. In three instances, the differences were located primarily in the Technologies Department. The reasons for this are unclear, but would indicate that there are circumstances inherent in these technologies programs, or characteristics of students enrolling in these programs, that cause economically disadvantaged students to be less successful. (Here again, however, the Preparatory Program tends to mediate this.)

RECOMMENDATIONS

The findings of this study have important implications for the Albuquerque Technical-Vocational Institute.

The development of the Preparatory Program was based on the philosophy that students would have a lower probability of succeeding in programs at the Institute if they did not have a minimum level of skills. The Prep Program was designed to remediate this problem, and to give students instruction to bring their skills up to appropriate levels.

Apparently the Institure's Prep Program was based on

a sound philosophy and has been well designed. This research indicates that academically disadvantaged students, i.e., those who have taken Prep, are just as successful as non-disadvantaged students.

It also appears, based on the findings of this research, that the Preparatory Program has had a positive effect that was not anticipated in its design. Economically disadvantaged students are not as successful as non-disadvantaged students. However, students who are both economically and academically disadvantaged are generally just as successful as non-disadvantaged students. In other words, students who come from poor families and take Prep do just as well as non-disadvantaged students. It appears that the Prep Program not only is successful at remediating skills deficiencies, but also tends to mediate the negative educational effects of being poor.

Since economically disadvantaged students are less successful, there are implications for the Institute's testing and placement of students. Perhaps individual qualifying scores for programs (especially in the Technologies) need to be re-evaluated. Since economically disadvantaged students who take Prep do just as well as non-disadvantaged students, the Institute might also consider placing more economically disadvantaged students into the Prep Program, or some program similar to Prep,

especially those who score at or near the qualifying scores.

It needs to be pointed out to the administration of the Institute that, although there were several instances where statistically significant differences were found, actual differences were quite small. These actual differences ranged from three to ten percent.

RECOMMENDATIONS FOR FUTURE RESEARCH

The Institute should consider conducting additional research projects to answer questions that have been raised as a result of this research. Although far from being all inclusive, the administration of T-VI could conduct research to answer the following concerns:

1) Are students who cause the economically disadvantaged group to be less successful those who just marginally passed the qualifying tests?

2) What are the causes for both groups, economically disadvantaged and both economically and academically disadvantaged, to be given lower ratings on V-21, overall performance. Another follow-up, using the same instrument as was used on the original 90 - 120 day employer follow-up, would help answer this.

3) What changes could be made in the testing and placement of students to eliminate the lower ratings for economically disadvantaged students?

APPENDIXES

Appendix A

Variables Used In The Study

Number	Name
V-1	Student Status at T-VI

FROM ORIGINAL 90-120 DAY EMPLOYER FOLLOW-UP SURVEY

V-2	Quality of work
V-3	Quantity of work
V-4	Possesses specific job-related knowledge
V-5	Operation of equipment and apparatus
V-6	Possesses basic reading, verbal and communications skills
V-7	Willingness to accept responsibility
V-8	Punctuality
V-9	Ability to work without supervision
V-10	Willingness to learn and improve
V-11	Cooperation with co-workers
V-12	Cooperation with management
V-13	Compliance with company policies, rules and regulations
V-14	Work attendance
V-15	Overall competency, effectiveness, proficiency, attitudes, etc.

FROM EMPLOYER SURVEY CONDUCTED FOR THIS STUDY

V-16	Is T-VI graduate still employed?
V-17	How long has graduate been employed?
V-18	Is graduate in same job?
V-19	Graduate's starting salary
V-20	Graduate's current salary
V-21	Graduate's overall performance
V-22	How long was graduate employed?
V-23	Graduate's reason for leaving

SCHOOL USE ONLY

Code ☐☐☐☐☐☐☐☐☐☐

No. ☐☐☐☐☐

EMPLOYEE PI

Appendix B.

DIRECTIONS: Ple... other workers in the same work gro... mpare him with others who have wor... confidential. Please respond to all ...

90 - 120 Day Employer Follow-Up Summary of Responses

I. Total number of *months* ...)

PLEASE RESPOND TO THE FOLLOWING QUESTIONS BY PLACING AN "X" IN THE APPROPRIATE SQUARE

II. In comparison with other workers in the same work group, how would you rate the employee on each of the following characteristics?

	above average	about average	below average
1. The quality of employee's work	39.9%	52.9%	7.2%
2. The quantity of employee's work	30.5	57.7	11.8
3. The degree to which the employee possesses specific job-related knowledge important to success on this job	31.7	59.8	8.5
4. The degree to which the employee is able to operate the equipment and apparatus used on the job	34.8	61.3	3.9
5. The degree to which the employee possesses basic reading, verbal and computational skills	39.3	56.2	4.5

III. In comparison to others in the employee's work group, how would you rate the employee on each of the following characteristics?

	above average	about average	below average
1. Willingness to accept responsibility	42.3%	46.2%	11.5%
2. Punctuality	47.2	46.5	6.3
3. Ability to work without supervision	37.5	48.0	14.5
4. Willingness to learn and improve	54.1	39.6	6.3
5. Cooperation with co-workers	51.1	43.5	5.4
6. Cooperation with management	50.8	44.1	5.1
7. Compliance with company policies, rules, and practices	41.4	52.3	6.3
8. Work attendance	48.7	45.3	6.0

IV. In comparison with other workers in the same work group, how would you rate the employee's over-all competency, effectiveness, proficiency, general over-all work attitudes, and other elements of successful job performance?

(16)

[1]	In the top 1/4	39.9%
[2]	In the top 1/2 but not among the top 1/4	40.2%
[3]	In the bottom 1/2 but not among the lowest 1/4	14.2%
[4]	In the lowest 1/4	5.7%

Comments: _____

15

The T-VI graduate is _____

Has the above named person ever been employed by your firm?

- No
56.1% Yes, but no longer employed
43.9% Yes, still employed

Appendix C.

Special Employer Follow-Up
Summary of Responses

If the named T-VI graduate is currently employed by your firm, please answer the questions in this box.

1. How long has this person been employed by your firm?
   14* months (Median)

2. Is this person in the same job as when first employed?
   61.6% Yes
   37.4% No, promoted
   1.0% No, demoted

3. What was this person's starting salary?
   $650* (Median) per month

4. What is this person's current salary?
   $850* (Median) per month

5. When compared to other employees in the same or similar positions, how would you rate this person's overall performance?
   57.1% Above average
   39.5% Average
   3.4% Below average

*Approximate Figures

If the named T-VI graduate is not currently employed by your firm, please answer the questions in this box.

1. How long was this person employed by your firm?
   5* months (Median)

2. Why did this person leave?
   53.6% Quit
   11.9% Reduction-in-force (Laid off)
   10.1% Fired
   24.4% Other _____

3. If you know this person's current employer, please give employer's name and address.

_____

_____

_____